

FIGURE 1
(PRIOR ART)

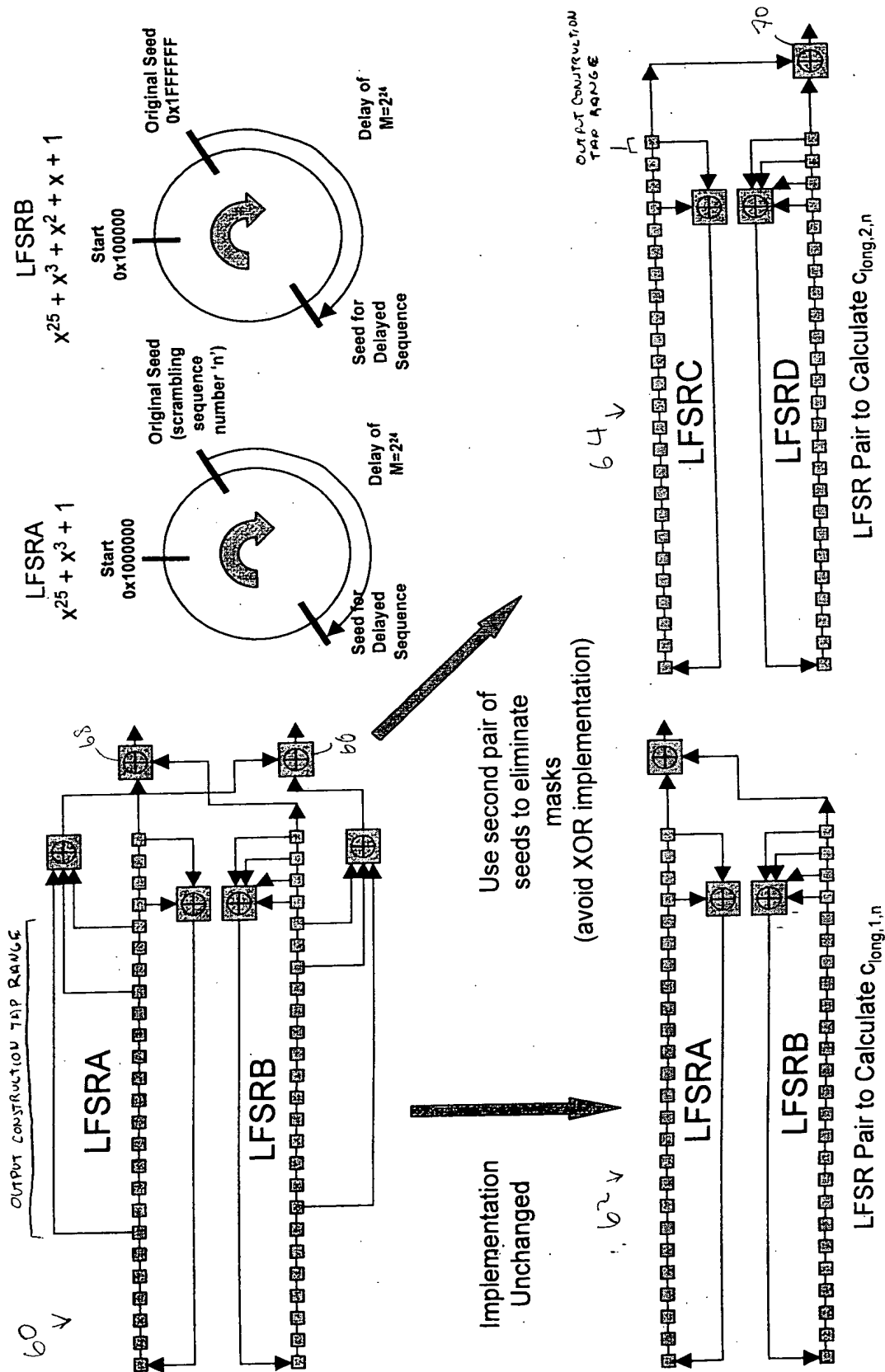


FIGURE 2

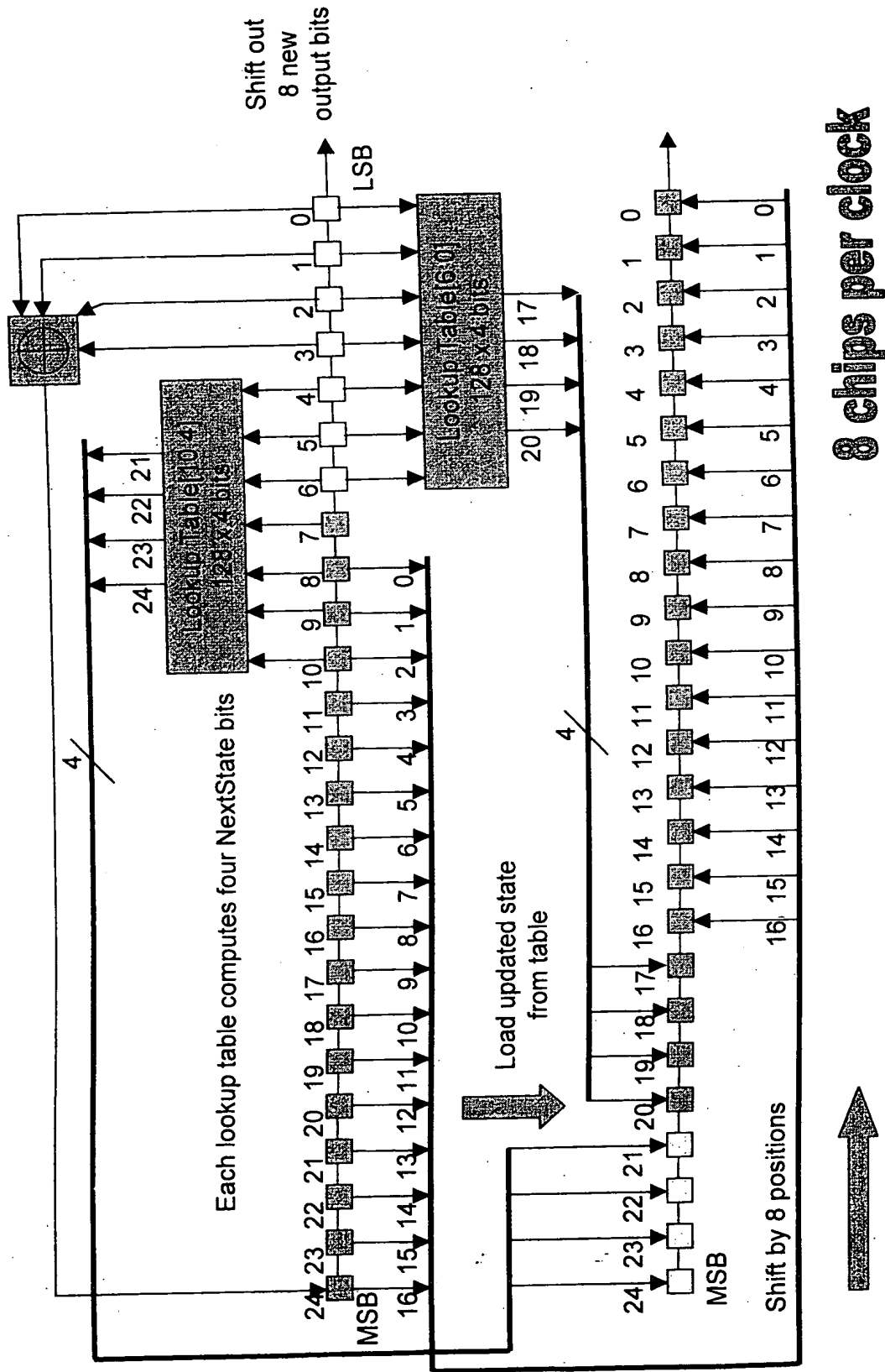


FIGURE 3

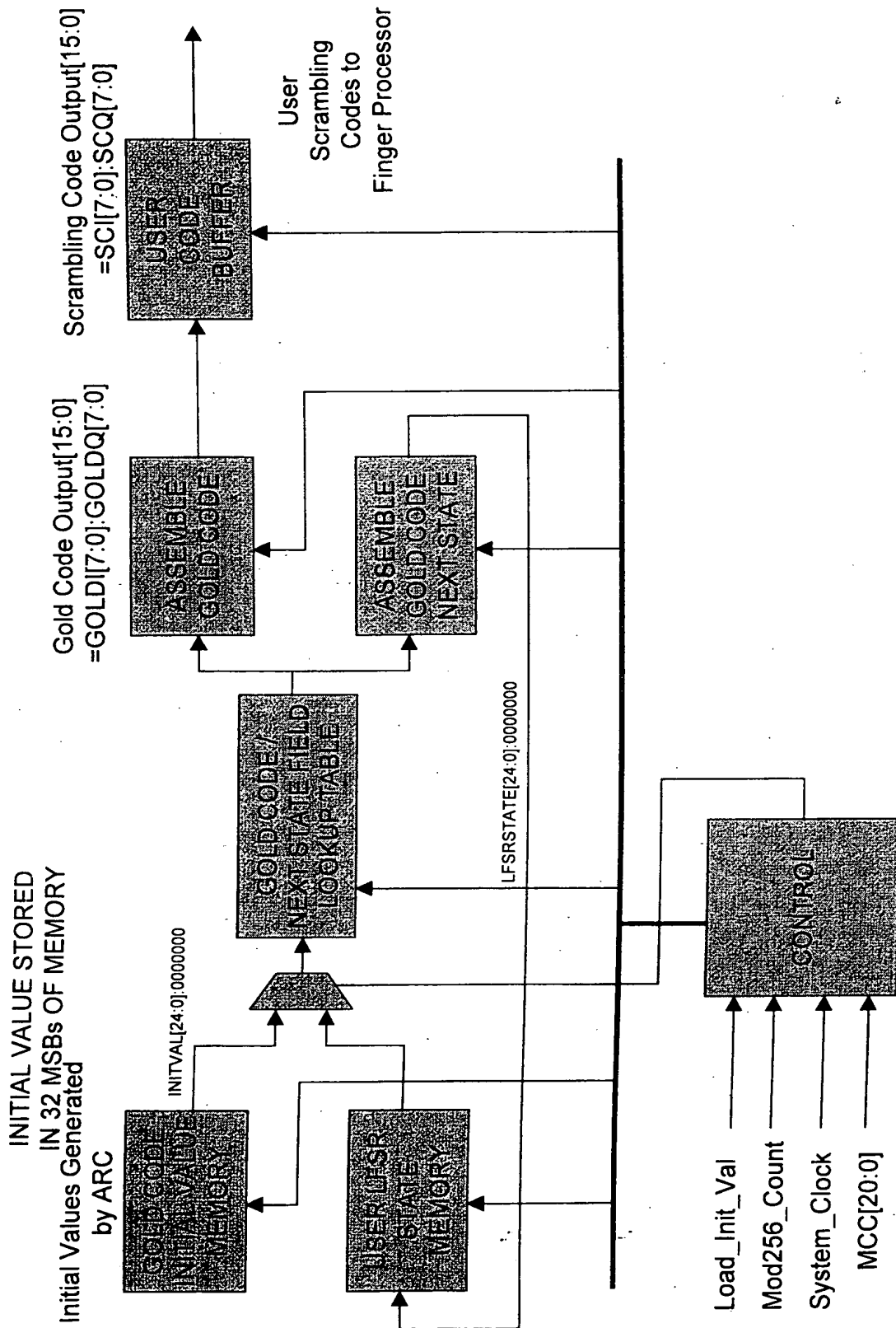


FIGURE 4

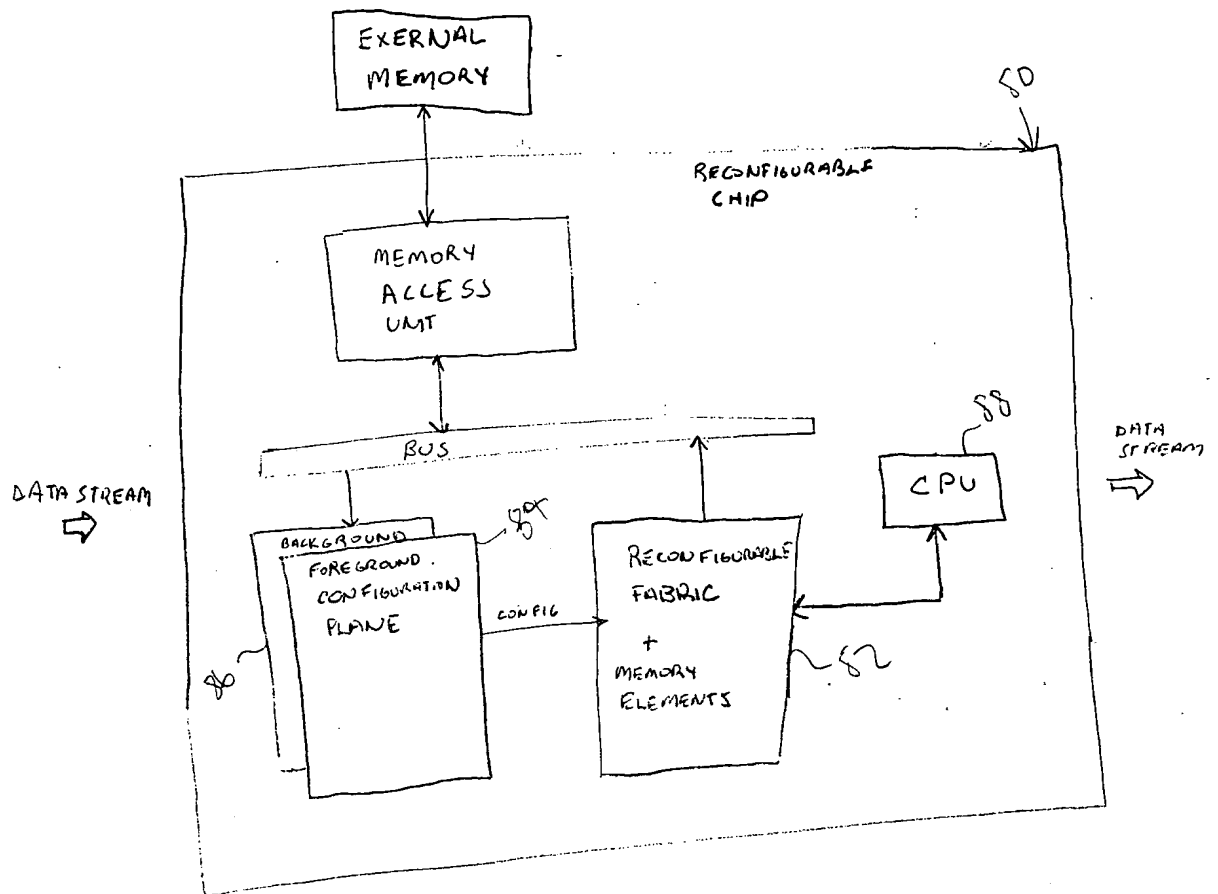
[illegible]

FIGURE 5

and the other in the North House at York.

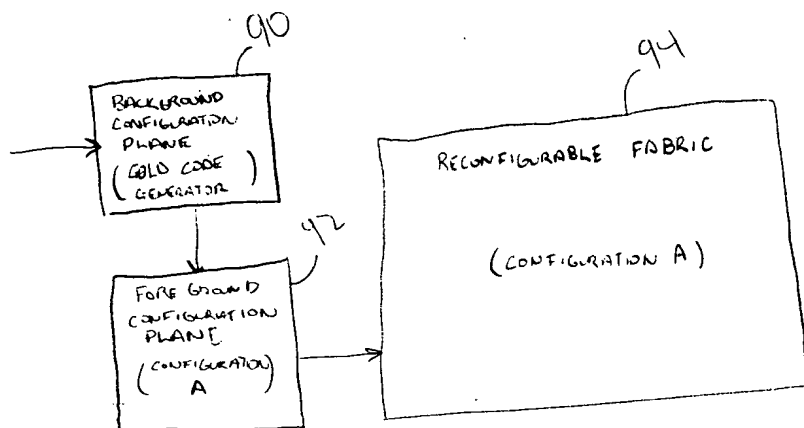


FIGURE 6A

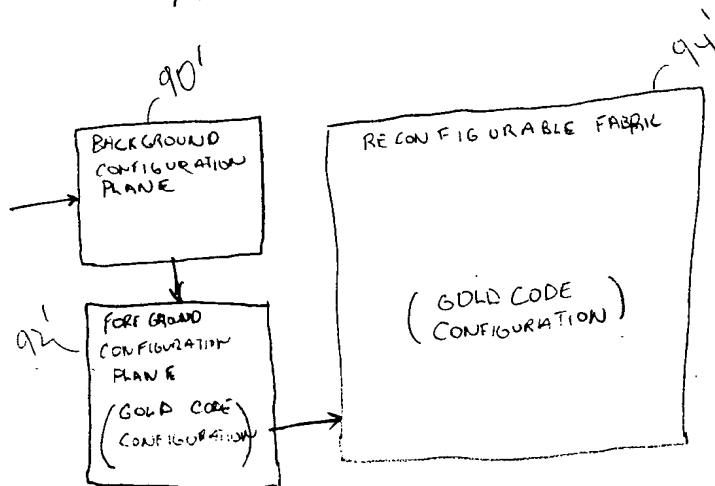


FIGURE 6B

$$C_{\text{long},n}[7:0] = \text{LSFRA}[7:0] \text{ XOR } \text{LSFRB}[7:0]$$

Let us define $\text{LFSRC}'[i] = \text{LSFRC}[2\lfloor i/2 \rfloor]$

$$C_{\text{long},n}(i) = C_{\text{long},n}(i)(1 + j(-1)^i(C_{\text{long},n}(2\lfloor i/2 \rfloor)) \text{ (from 3G TS25.213)}$$

Multiplying bits by +1/-1 is the same as XOR for 0s and 1s.

XORing by 0xAA can be used in place of the $(-1)^i$ term.

In binary representation, the Scrambling Code $C_{\text{long},n}$ becomes:

$$C_{\text{long},n}[7:0] = C_{\text{long},n}[7:0](1 + j(0xAA) \text{ XOR } C_{\text{long},n}[7:0])$$

$$C_{\text{long},n}[7:0] = \text{LFSRA}[7:0] \text{ XOR } \text{LSFRB}[7:0]$$

$$+ j(\text{LFSRA}[7:0] \text{ XOR } \text{LSFRB}[7:0] \text{ XOR } 0xAA \text{ XOR } \text{LFSRC}'[7:0] \text{ XOR } \text{LFSRD}'[7:0])$$

$$C_{\text{long},n}[7:0] = \text{SCI}[7:0] + j\text{SCQ}[7:0]$$

Let us define $\text{LFSRD}''[7:0] = 0xAA \text{ XOR } \text{LFSRD}'[7:0]$, then:

$$C_{\text{long},n}[7:0] = (\text{LFSRA}[7:0] \text{ XOR } \text{LSFRB}[7:0])$$

$$+ j(\text{LFSRA}[7:0] \text{ XOR } \text{LSFRB}[7:0] \text{ XOR } \text{LFSRC}'[7:0] \text{ XOR } \text{LFSRD}''[7:0])$$

We use a lookup table to compute $\text{LFSRC}'[7:0]$ and $\text{LFSRD}''[7:0]$

Gold Code Generator Lookup[6:0] Definitions

<p>At Address 4n+0: $OUT[7:0] = Next\ StateA[3:0]:PASSA[3:0]$</p> <p> $OUT[7] = IN[6] \text{ XOR } IN[3]$ $OUT[6] = IN[5] \text{ XOR } IN[2]$ $OUT[5] = IN[4] \text{ XOR } IN[1]$ $OUT[4] = IN[3] \text{ XOR } IN[0]$ $OUT[3] = IN[3]$ $OUT[2] = IN[2]$ $OUT[1] = IN[1]$ $OUT[0] = IN[0]$ </p>	<p>At Address 4n+2: $OUT[7:0] = Next\ StateC[3:0]:LFSRC[3:0]$</p> <p> $OUT[7] = IN[6] \text{ XOR } IN[3]$ $OUT[6] = IN[5] \text{ XOR } IN[2]$ $OUT[5] = IN[4] \text{ XOR } IN[1]$ $OUT[4] = IN[3] \text{ XOR } IN[0]$ $OUT[3] = IN[2]$ $OUT[2] = IN[2]$ $OUT[1] = IN[0]$ $OUT[0] = IN[0]$ </p>
<p>At Address 4n+1: $OUT[7:0] = Next\ StateB[3:0]:PASSB[3:0]$</p> <p> $OUT[7] = IN[6] \text{ XOR } IN[5] \text{ XOR } IN[4] \text{ XOR } IN[3]$ $OUT[6] = IN[5] \text{ XOR } IN[4] \text{ XOR } IN[3] \text{ XOR } IN[2]$ $OUT[5] = IN[4] \text{ XOR } IN[3] \text{ XOR } IN[2] \text{ XOR } IN[1]$ $OUT[4] = IN[3] \text{ XOR } IN[2] \text{ XOR } IN[1] \text{ XOR } IN[0]$ $OUT[3] = IN[3]$ $OUT[2] = IN[2]$ $OUT[1] = IN[1]$ $OUT[0] = IN[0]$ </p>	<p>At Address 4n+3: $OUT[7:0] = Next\ StateD[3:0]:LFSRD[3:0]$</p> <p> $OUT[7] = IN[6] \text{ XOR } IN[5] \text{ XOR } IN[4] \text{ XOR } IN[3]$ $OUT[6] = IN[5] \text{ XOR } IN[4] \text{ XOR } IN[3] \text{ XOR } IN[2]$ $OUT[5] = IN[4] \text{ XOR } IN[3] \text{ XOR } IN[2] \text{ XOR } IN[1]$ $OUT[4] = IN[3] \text{ XOR } IN[2] \text{ XOR } IN[1] \text{ XOR } IN[0]$ $OUT[3] = \neg IN[2]$ $OUT[2] = IN[2]$ $OUT[1] = \neg IN[0]$ $OUT[0] = IN[0]$ </p>

FIGURE 8A

Gold Code Generator Lookup[10:4] Definitions

<p>At Address 4n+0: OUT[7:0] = IN[7:4]:Next StateA[7:4]</p> <p>OUT[7] = IN[3] OUT[6] = IN[2] OUT[5] = IN[1] OUT[4] = IN[0] OUT[3] = IN[6] XOR IN[3] OUT[2] = IN[5] XOR IN[2] OUT[1] = IN[4] XOR IN[1] OUT[0] = IN[3] XOR IN[0]</p>	<p>At Address 4n+2: OUT[7:0] = IN[7:4]:Next StateC[7:4]</p> <p>OUT[3] = IN[2] OUT[2] = IN[2] OUT[1] = IN[0] OUT[0] = IN[0] OUT[7] = IN[6] XOR IN[3] OUT[6] = IN[5] XOR IN[2] OUT[5] = IN[4] XOR IN[1] OUT[4] = IN[3] XOR IN[0]</p>
<p>At Address 4n+1: OUT[7:0] = IN[7:4]:Next StateB[7:4]</p> <p>OUT[7] = IN[3] OUT[6] = IN[2] OUT[5] = IN[1] OUT[4] = IN[0] OUT[3] = IN[6] XOR IN[5] XOR IN[4] XOR IN[3] OUT[2] = IN[5] XOR IN[4] XOR IN[3] XOR IN[2] OUT[1] = IN[4] XOR IN[3] XOR IN[2] XOR IN[1] OUT[0] = IN[3] XOR IN[2] XOR IN[1] XOR IN[0]</p>	<p>At Address 4n+3: OUT[7:0] = IN[7:4]:Next StateD[7:4]</p> <p>OUT[3] = /IN[2] OUT[2] = IN[2] OUT[1] = /IN[0] OUT[0] = IN[0] OUT[7] = IN[6] XOR IN[5] XOR IN[4] XOR IN[3] OUT[6] = IN[5] XOR IN[4] XOR IN[3] XOR IN[2] OUT[5] = IN[4] XOR IN[3] XOR IN[2] XOR IN[1] OUT[4] = IN[3] XOR IN[2] XOR IN[1] XOR IN[0]</p>

FIGURE 8B